



TETRA TECH EM INC.

EPA Region 5 Records Ctr.



255956

April 28, 2006

Mr. Kevin Turner  
On-Scene Coordinator  
Emergency Response Branch  
U.S. Environmental Protection Agency, Region 5  
c/o Crab Orchard National Wildlife Refuge  
8588 Route 148  
Marion, IL 62959

**Subject: Letter Report**  
**Sauget Area - Site Q, Cahokia, St. Clair County, Illinois**  
**Technical Direction Document No. S05-0511-006**  
**Tetra Tech Contract No. 68-W-00-129**

Dear Mr. Turner:

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed letter report for the Sauget Area – Site Q in Cahokia, St. Clair County, Illinois. If you have any questions or comments regarding the report or require additional copies, please contact Therese Gioia at (312) 201-7431 or me at (314) 892-6322, ext 25.

Sincerely,

for Thomas Binz  
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer  
Therese Gioia, Tetra Tech START Program Manager

**LETTER REPORT**

**SAUGET AREA – SITE Q**  
**CAHOKIA, ST. CLAIR COUNTY, ILLINOIS**

Prepared for:

**U.S. ENVIRONMENTAL PROTECTION AGENCY**  
Region 5 Emergency Response Branch  
c/o Crab Orchard National Wildlife Refuge  
8588 Route 148  
Marion, IL 62959

Date Prepared:	April 28, 2006
TDD No.:	S05-0511-006
Contract No.:	68-W-00-129
Prepared By:	Tetra Tech EM Inc.
START Project Manager:	Thomas Binz
Telephone No.:	(314) 892-6322 ext. 25
U.S. EPA On-Scene Coordinator:	Kevin Turner
Telephone No.:	(618) 997-0115

## CONTENTS

<b><u>Section</u></b>	<b><u>Page</u></b>
1.0 INTRODUCTION.....	1
2.0 SITE BACKGROUND .....	1
3.0 SITE ACTIVITIES.....	1
3.1 MAGNETOMETER SURVEY .....	1
3.2 DRUM RECOVERY ACTIVITIES .....	2
4.0 ANALYTICAL ACTIVITIES .....	3
5.0 SUMMARY .....	3
 <b><u>Appendix</u></b>	
A FIGURES	
B PHOTOGRAPHIC LOG	



## **1.0 INTRODUCTION**

The U.S. Environmental Protection Agency (U.S. EPA) Region 5 tasked the Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) to perform the following tasks at Sauget Area – Site Q (Site Q):

- Locate two buried evidence drums by conducting a magnetometer survey
- Facilitate safe excavation and extraction of the buried drums and assist in sampling the contents of the buried drums

This report discusses the site background, site activities, and analytical activities, and provides a summary of site-related activities. The appendices to this report present figures and a photographic log of site conditions and activities.

## **2.0 SITE BACKGROUND**

Site Q is located in Cahokia, St. Clair County, Illinois (see Figures 1 and 2 in Appendix A). Between 1999 and 2000, U.S. EPA On-Scene Coordinator (OSC) Kevin Turner conducted a Superfund-financed drum removal action at Site Q. During and near the termination of the removal action, OSC Turner collected representative sample evidence from the on-site landfill and placed the sample evidence into two 55-gallon drums that were then over-packed into 85-gallon drums and buried near the western edge of the confines of Site Q.

## **3.0 SITE ACTIVITIES**

The following details activities conducted by START and other parties in the effort to locate and recover U.S. EPA sample evidence located at Site Q. Appendix B provides a photographic log of site activities and conditions.

### **3.1 MAGNETOMETER SURVEY**

START Team Leader Mr. Thomas Binz and START geophysicist Mr. Joe Parish mobilized to Site Q on December 5, 2005. OSC Turner was present to instruct START personnel about the general location of the buried evidence drums. START was tasked to complete a subsurface magnetic survey of the Site Q area to effectively locate the over-packed drums buried on site. The survey was conducted using a Geometrics G858 Cesium Vapor Magnetometer (CVM). The CVM unit identified three likely locations



for the buried drums in the southwest portion of the site and one probable location further north. The more likely locations were identified as Points 1, 2, and 3. The other location, identified as Point 13, was ruled out based on information provided to START by OSC Turner. Figure 3 in Appendix A shows all point locations. Based on magnetometer readings, the approximate location of the buried drums was determined. The table below summarizes the global positioning system (GPS) coordinates for the approximate area of the buried drums.

#### **GPS COORDINATES FOR APPROXIMATE AREA OF BURIED DRUMS**

<b>X Value UTM (meters)</b>	<b>Y Value UTM (meters)</b>	<b>Longitude</b>	<b>Latitude</b>
743988.6	4274197.2	-90.11° 56' 18"	38.34° 57' 92"

Note:

UTM = Universal Transverse Mercator

### **3.2 DRUM RECOVERY ACTIVITIES**

START was further tasked to recover the sample evidence drums and assist in extracting the drum contents, thereby allowing U.S. EPA to re-containerize the samples for overnight delivery to a U.S. EPA laboratory. On December 6, 2005, before mobilizing again to Site Q, START contacted the Illinois JULIE or One Call system to provide utility clearance for the proposed excavation area at Site Q. Utility clearance was fully approved under Ticket No. A3401313 on December 8, 2005.

Mobilization to Site Q for the evidence drum removal and sampling event was conducted on December 13, 2005. In addition to U.S. EPA OSC Kevin Turner, the following individuals were also present:

- Nabil Fayoumi U.S. EPA Region 5
- Tom Martin U.S. EPA Region 5
- Jon Beihoffer U.S. EPA National Enforcement Investigations Center (NEIC)
- Kevin Lyakowaki URS
- Brandi Higgins URS
- John Collins Husch & Eppenberger
- Thomas Binz START
- Ron Carroll START
- Jeramy Robeen START

After a temporary base-of-operations tent was constructed, START personnel began excavating at Point 1 using a backhoe. This excavation was abandoned after it was determined that the high CVM readings



detected during the magnetometer survey were generated by scrap metal. START continued the excavation from Point 2 as the initial excavation area was enlarged. The drums were encountered at this location, and START confirmed the subsurface location of the drums by exposing the drum tops through manual excavation. START then continued excavation activities and removed both drums. Drum 1 was removed without incident, but the seal of Drum 2 was damaged during removal activities.

Jon Beihoffer, U.S. EPA NEIC Senior Chemist, sampled the drum contents. Upon completion of sampling activities, Drum 1 was re-packaged as it was found and repositioned within the excavation. Drum 2 was re-packaged, but the damaged drum over-pack was crushed prior to placement within the excavation. The excavation was then backfilled, and the area was restored to its original condition.

During excavation and sampling activities, START performed continuous air monitoring using the TVA-1000, a dual-unit photoionization detector (PID) and flame ionization detector (FID). PID readings were only taken during excavation and recovery activities and ranged from 0.0 to 1.17 parts per million (ppm). Readings during the opening of Drum 1 were as follows: 52.75 ppm (PID) and 2,752 ppm (FID). Readings during the opening of Drum 2 ranged from 412.1 to 3,140 ppm (PID) and 2.5 to 61.0 ppm (FID). Drum 1 contained previously containerized evidence samples collected by OSC Turner, and Drum 2 contained Mallinckrodt-brand chemical vials and glassware previously collected at the site by OSC Turner.

The temporary base-of-operations tent structure was removed, and all manpower, equipment, and supply resources were demobilized from the site at 4:15 p.m. on December 13, 2005.

#### **4.0 ANALYTICAL ACTIVITIES**

Jon Beihoffer, U.S. EPA NEIC Senior Chemist, sampled the drums and shipped the samples under chain-of-custody to a U.S. EPA laboratory. START was tasked only to conduct survey and drum recovery activities and to assist in sample shipment. START dropped off four coolers containing the ice-preserved samples on behalf of U.S. EPA to the FedEx drop-off location at 1 South Broadway in St. Louis, Missouri. Analytical results are to be provided through interagency means and not by START; therefore, analytical results are not discussed in this report.

#### **5.0 SUMMARY**

U.S. EPA Region 5 tasked START to locate and recover two buried on-site sample evidence drums at



Site Q. A CVM was used on December 5, 2005, to more accurately pinpoint the location of the two buried drums. This survey indicated three probable locations in the southwest portion of Site Q. START re-mobilized to the site after obtaining utility clearance on December 13, 2005, to initiate drum recovery activities. START performed excavation activities using a backhoe.

After the two drums were excavated, START opened the drums so that Mr. Jon Beihoffer of the U.S. EPA NEIC could collect evidence samples from each drum. Mr. Beihoffer sampled the drums and prepared the samples for shipment under chain of custody to a U.S. EPA laboratory. START dropped off four coolers containing the ice-preserved samples on behalf of U.S. EPA to the FedEx drop-off location at 1 South Broadway in St. Louis, Missouri. Analytical results are to be provided through interagency means and not by START; therefore, analytical results are not discussed in this report.

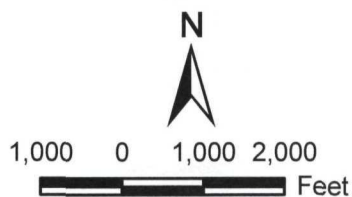
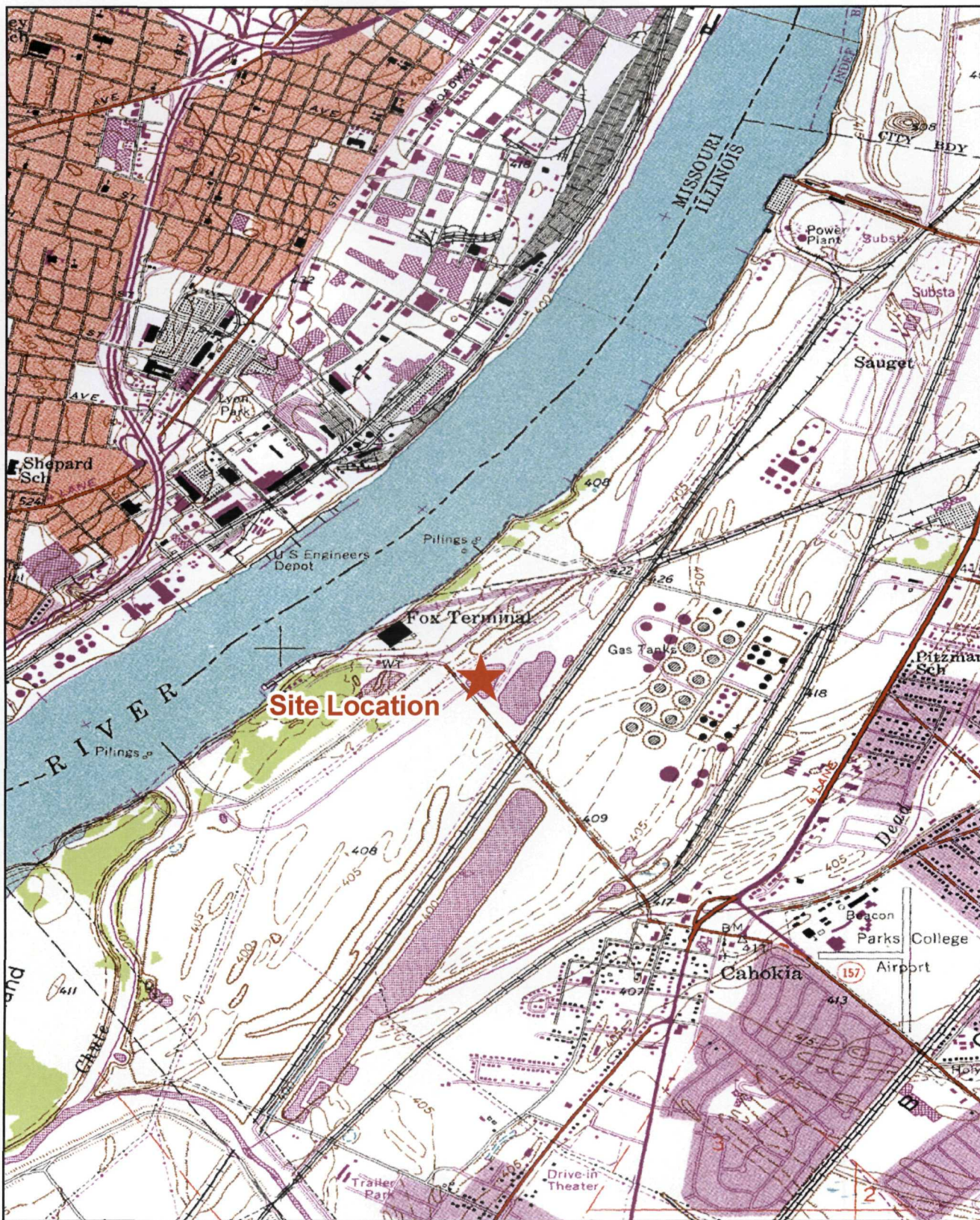
Upon completion of sampling activities, Drum 1 was re-packaged as it was found and repositioned within the excavation. Drum 2 was re-packaged, but the damaged drum over-pack was crushed prior to placement within the excavation. The excavation was then backfilled, and the area was restored to its original condition.



**APPENDIX A**  
**FIGURES**

(Three Pages)



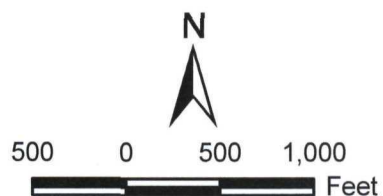
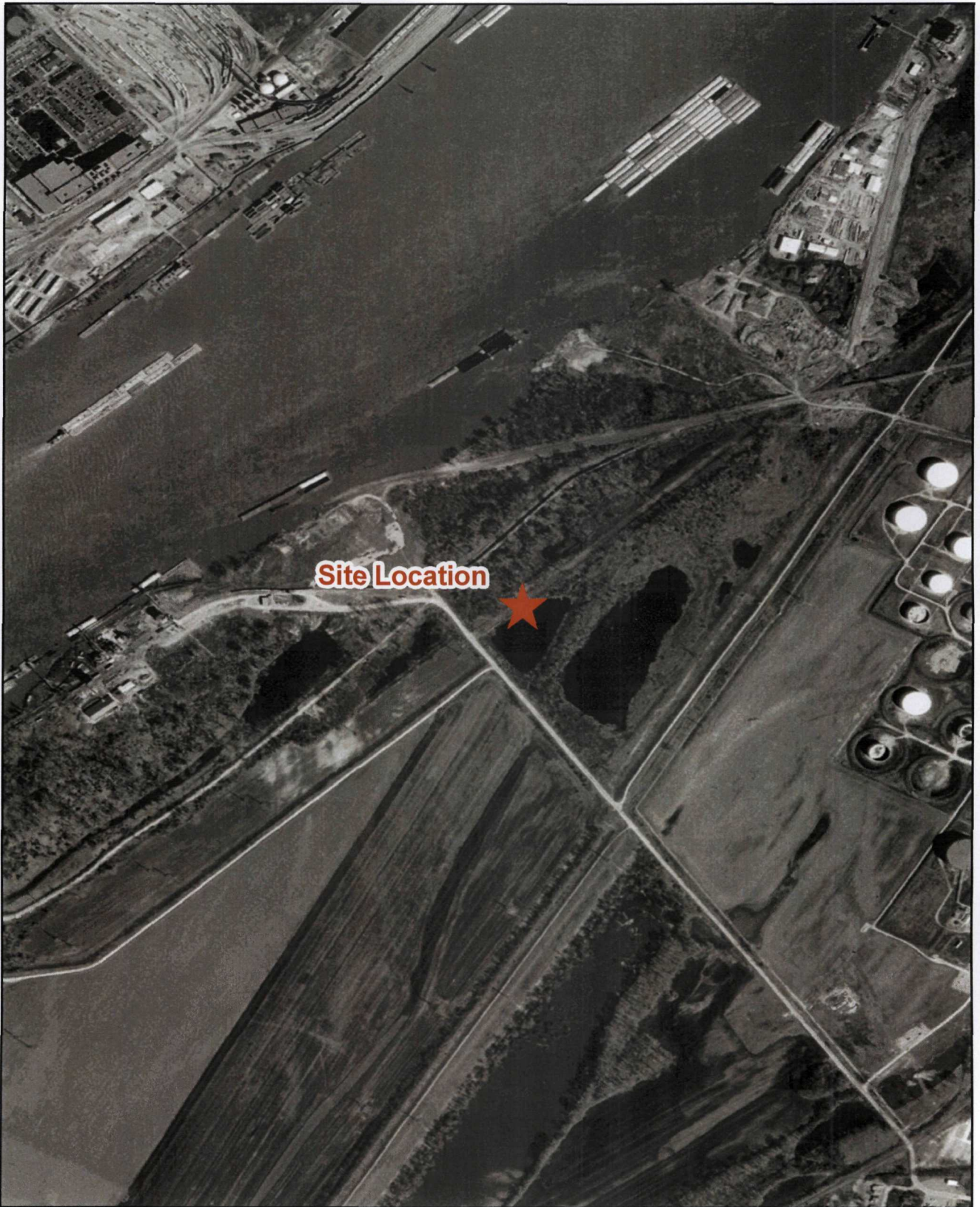


Sauget Area - Site Q  
Cahokia, St. Clair County, Illinois

**Figure 1**  
Site Location Map

**Tetra Tech EM Inc.**

Date: 04/12/06 Drawn By: Michelle Handley Project No: G9009.L0511006



Sauget Area - Site Q  
Cahokia, St. Clair County, Illinois

**Figure 2**  
Site Layout Map

**Tetra Tech EM Inc.**

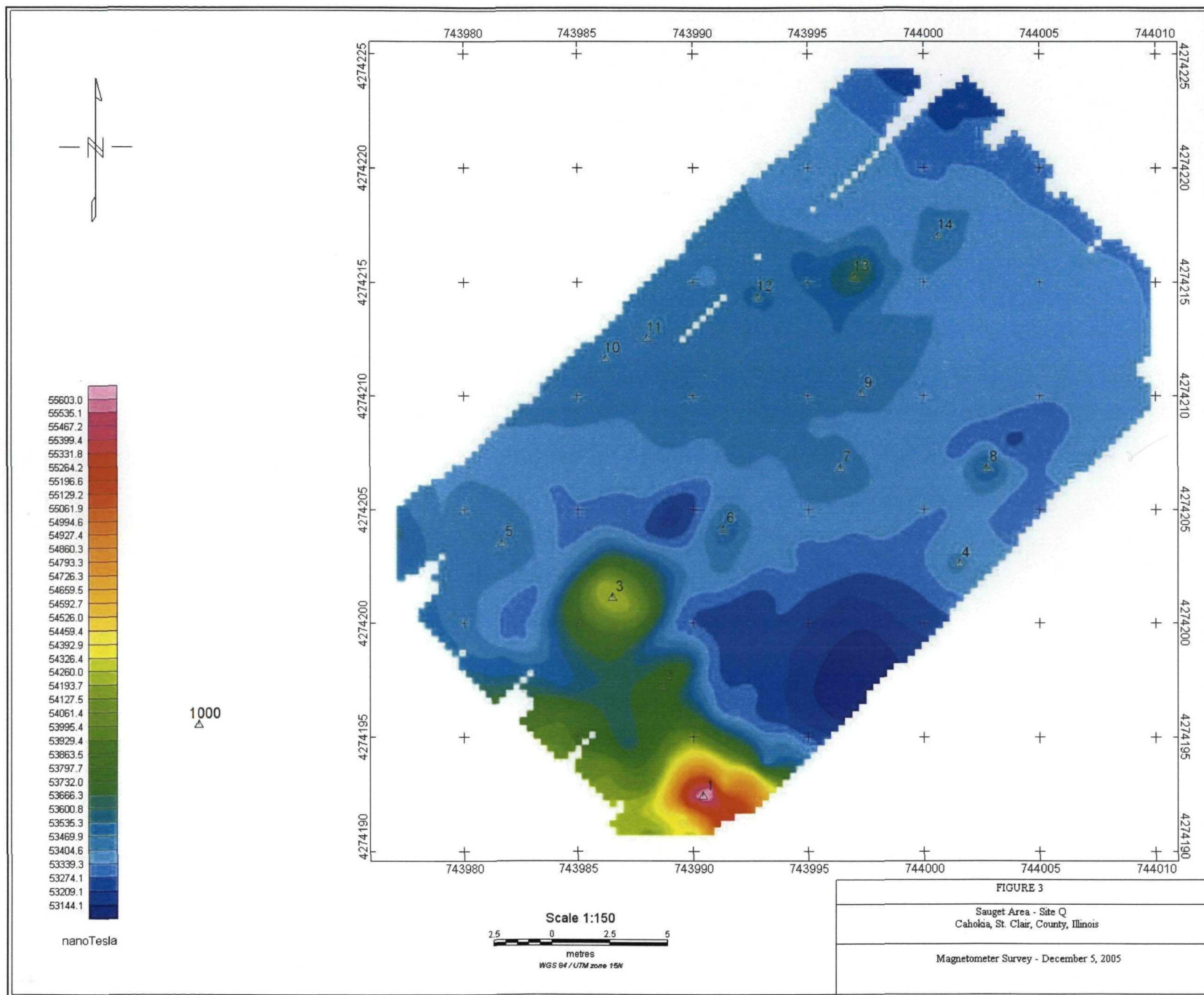
c:\SiteQ\Figure1.mxd

Source: USGS DOQQ - Cahokia, IL-MO NW, 1998

Date: 04/12/06

Drawn By: Michelle Handley

Project No: G9009.L0511006



**APPENDIX B**  
**PHOTOGRAPHIC LOG**  
(17 Pages)



**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: SE	<b>DESCRIPTION</b>	Excavator staged and awaiting OSC approval to begin drum removal activities	1
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech	12/13/05



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: SE	<b>DESCRIPTION</b>	Access road to Site Q near buried drums of environmental sample evidence	2
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech EM, Inc.	12/13/05

**Sauget Area Site - Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: S	DESCRIPTION	General site layout and temporary base-of-operations tent	3
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: SE	DESCRIPTION	Location of buried drums	4
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: NE	DESCRIPTION	Staked location of drums determined by magnetometer survey	5
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: S	DESCRIPTION	Temporary base-of-operations tent	6
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: S	DESCRIPTION	Temporary base-of-operations	7
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05



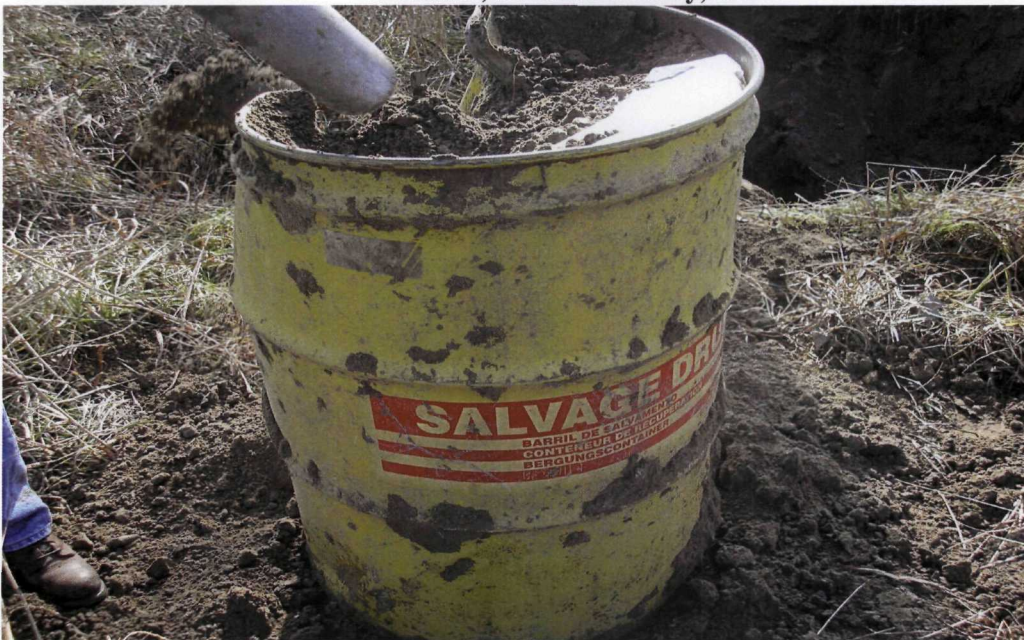
<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: E	DESCRIPTION	Top of buried drum in upright position	8
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: SE	<b>DESCRIPTION</b>	Drum 1 being brought to surface	9
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech	12/13/05
<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: N	<b>DESCRIPTION</b>	Technicians removing lid of Drum 1	10
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech	12/13/05

**Sauget Area Site Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: NE	DESCRIPTION	Drum 2 showing top damaged during excavation	11
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: NE	DESCRIPTION	Vermiculite packing material removed along with sample containers from Drum 2	12
	CLIENT	Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**

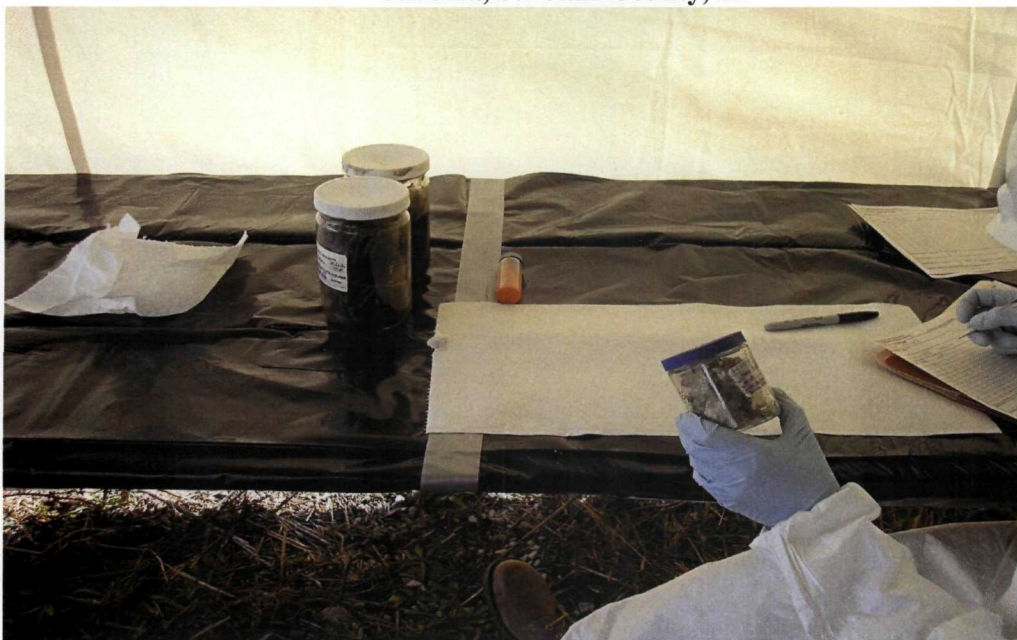


<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: NE	<b>DESCRIPTION</b>	Sample containers with residue on exterior of containers placed into zip-lock bags for handling purposes	13
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech	12/13/05

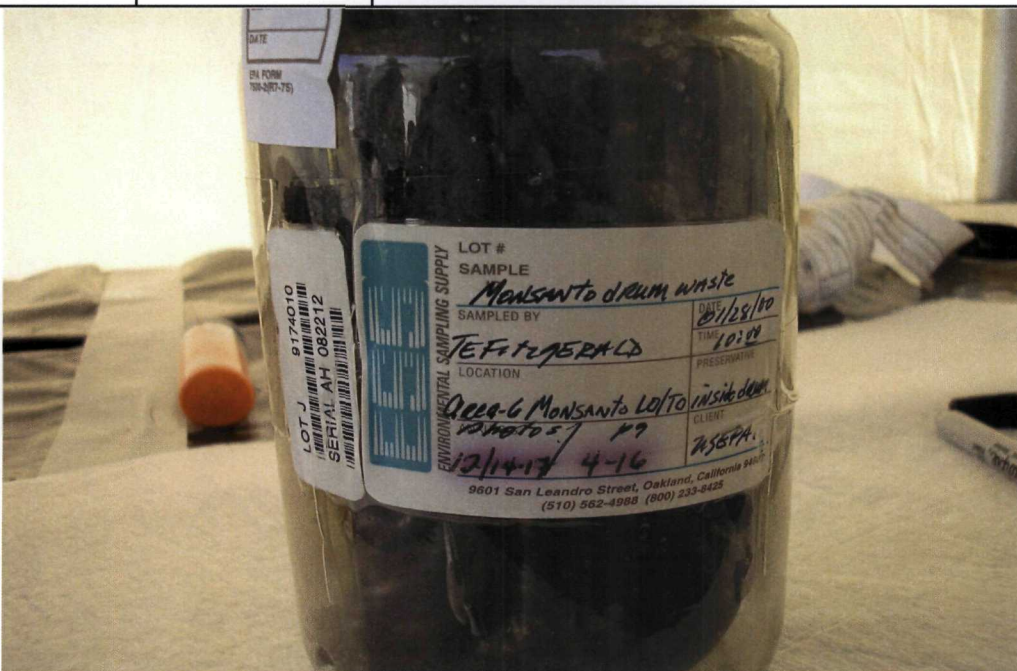


<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: NE	<b>DESCRIPTION</b>	OSC Kevin Turner and Jon Beihoffer of NEIC Branch	14
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**

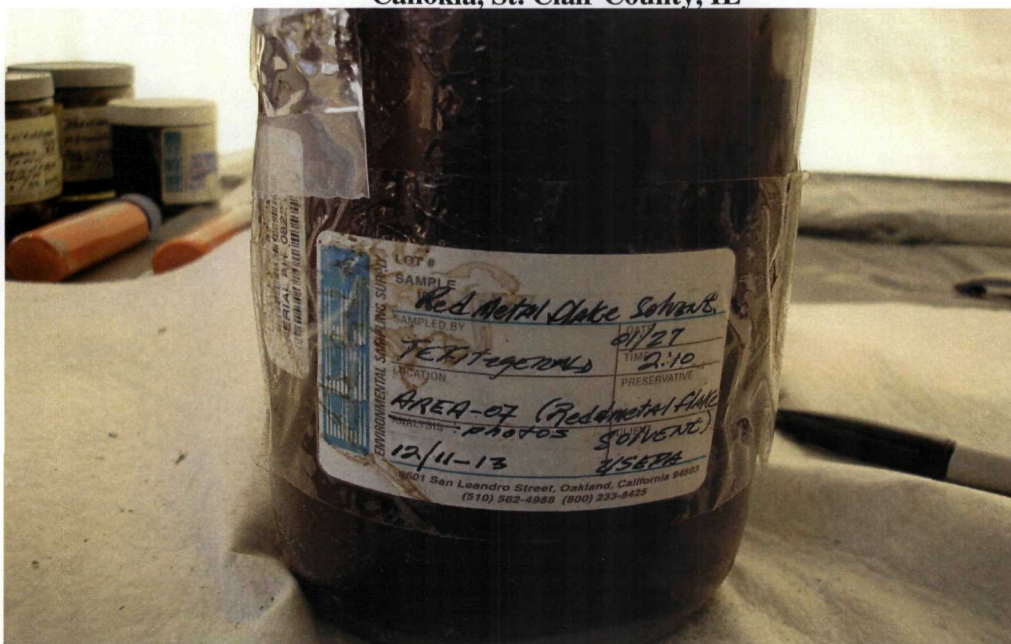


<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: E	DESCRIPTION	NEIC Senior Chemist Jon Biehoffer logging samples on chain-of-custody forms	15
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

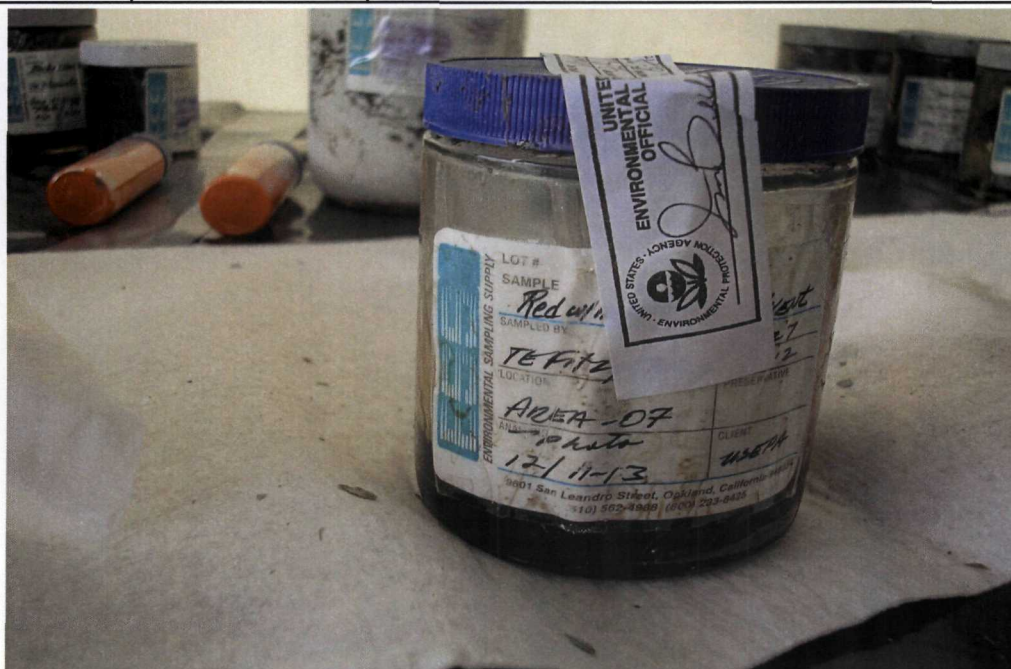


<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: NA	DESCRIPTION	Close-up of labels used in 2000 for sample evidence	16
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**

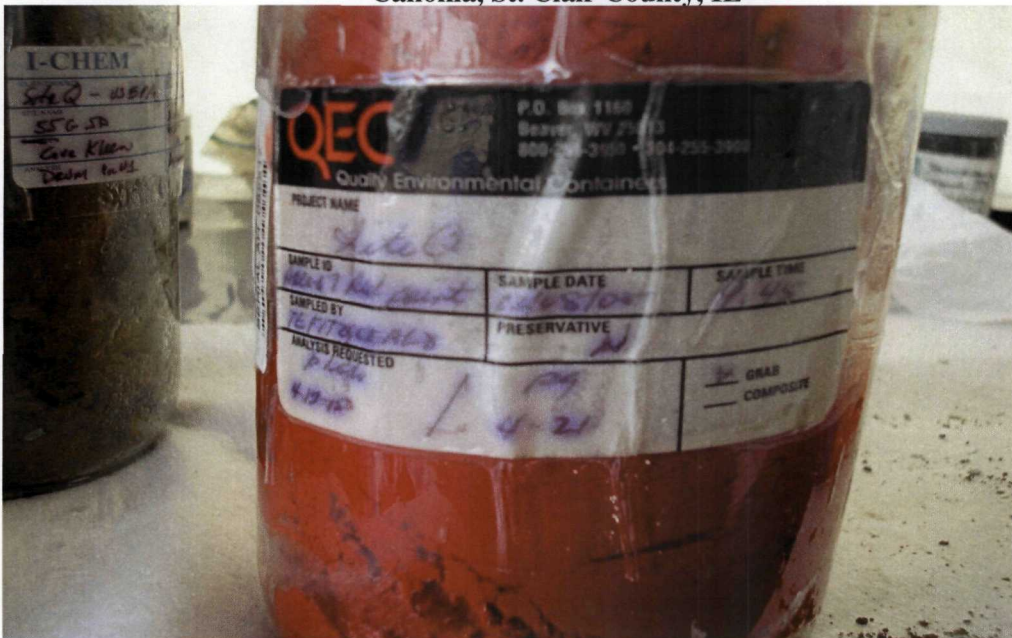


TETRA TECH PROJECT NO. S05-0511-006  Direction: E	DESCRIPTION	Sample evidence jar	17
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05



TETRA TECH PROJECT NO. S05-0511-006  Direction: E	DESCRIPTION	Sample evidence jar	18
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



TETRA TECH PROJECT NO. S05-0511-006  Direction: E	DESCRIPTION	Sample evidence jar	19
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05



TETRA TECH PROJECT NO. S05-0511-006  Direction: E	DESCRIPTION	Sample evidence vials	20
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



TETRA TECH PROJECT NO. S05-0511-006  Direction: E	DESCRIPTION	Sample evidence jars	21
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

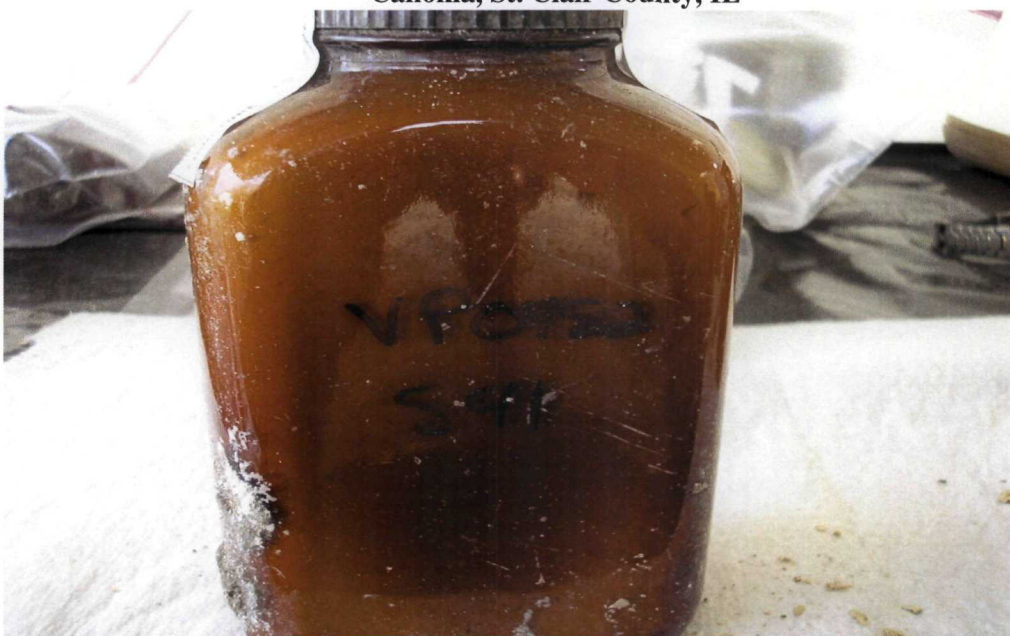


TETRA TECH PROJECT NO. S05-0511-006  Direction: NE	DESCRIPTION	Glass jars of chemical containers discovered during Site Q removal effort	22
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

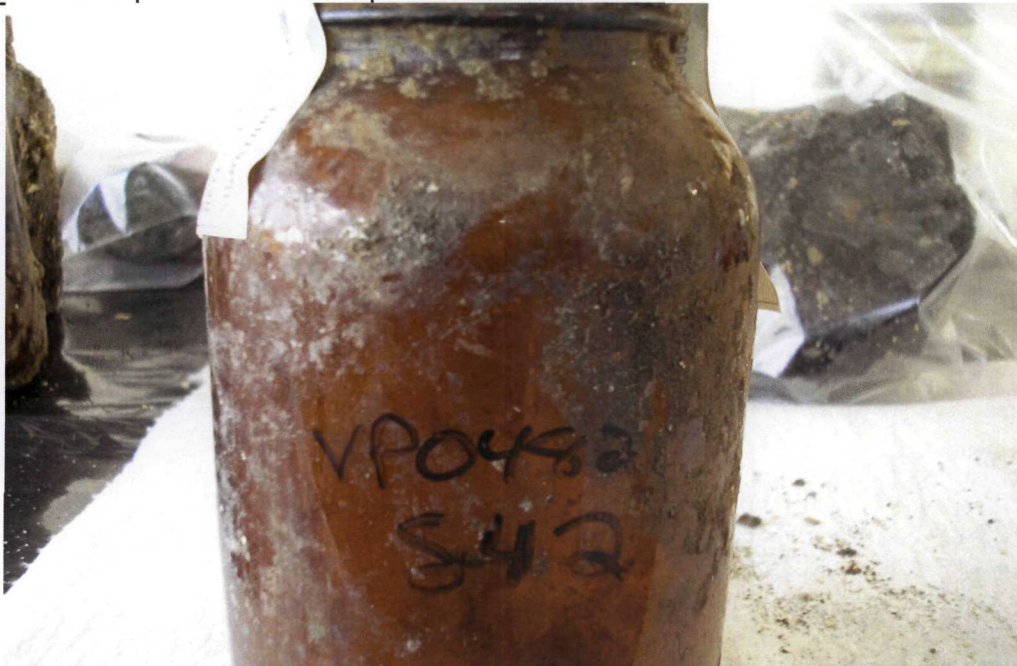
## Three glass jars containing white, irregularly shaped objects, likely evidence. The jars are labeled with handwritten text: 'VP0482 S39', 'VP0462 S39', and 'VP04 S39'. A small white label is also attached to the first jar with the text '3282030', 'LOT F', and '3282030'.

A clear plastic jar with a white lid is shown, containing a dark, irregularly shaped object. The jar has a white label with handwritten text 'VF10452' and 'S. 4. 01'. A small white label on the side of the jar reads 'LOT 5 2282030'. The jar is placed on a white surface.12

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**

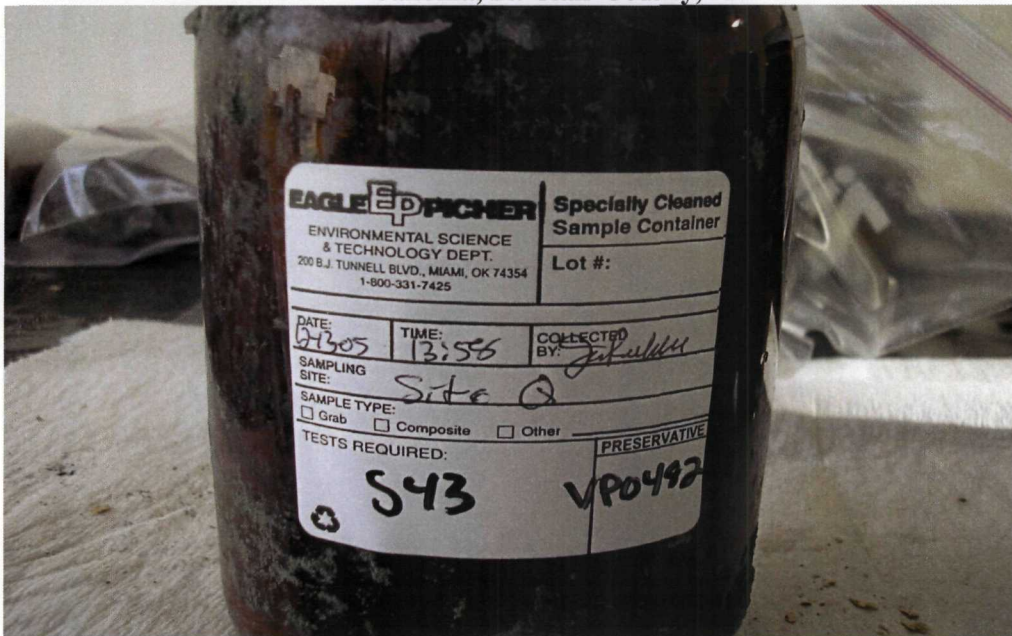


<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: E	DESCRIPTION	Original glass jar sample was used for laboratory testing purposes	25
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

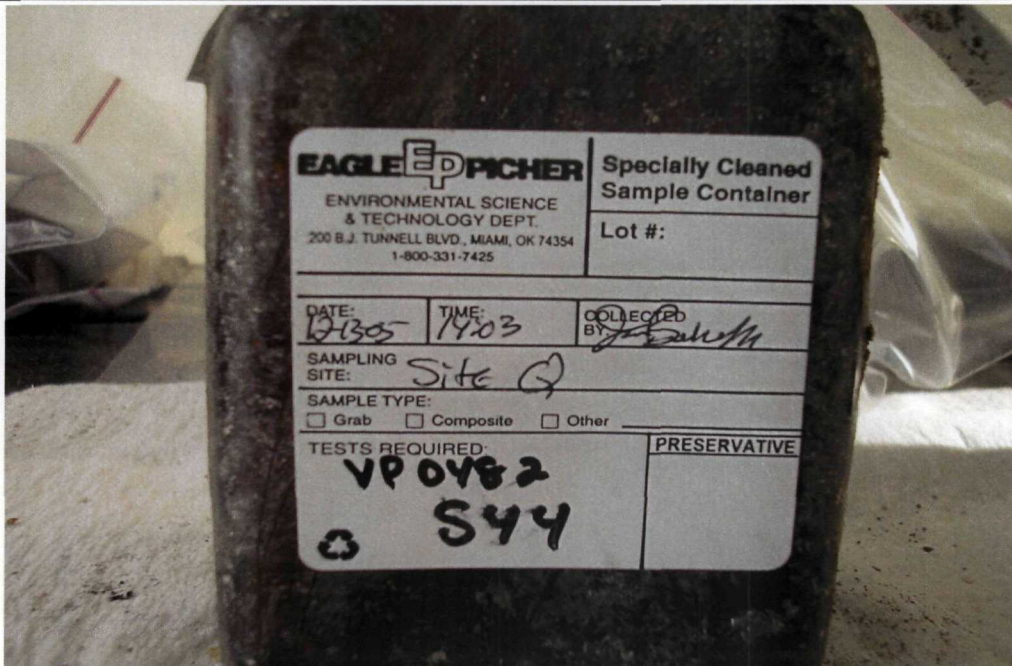


<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: E	DESCRIPTION	Original glass jar sample used for laboratory testing purposes	26
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



TETRA TECH PROJECT NO. S05-0511-006  Direction: E	DESCRIPTION	Original sample container used for laboratory testing purposes	27
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05



TETRA TECH PROJECT NO. S05-0511-006  Direction: E	DESCRIPTION	Original sample container used for laboratory testing purposes	28
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: E	<b>DESCRIPTION</b>	Due to leaking seal on original jar, this liquid sample required re-containerization prior to sample shipment	29
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech.	12/13/05
<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: W	<b>DESCRIPTION</b>	Drum remnants placed back into excavation	30
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: NE	DESCRIPTION	Drums returned to excavation	31
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: W	DESCRIPTION	Four sample coolers prepared for overnight delivery to laboratory	32
	CLIENT	U.S. Environmental Protection Agency Region 5	Date
	PHOTOGRAPHER	Tom Binz – Tetra Tech	12/13/05

**Sauget Area - Site Q  
Cahokia, St. Clair County, IL**



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: E	<b>DESCRIPTION</b>	Drum storage excavation backfilled and compacted	33
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech	12/13/05



<b>TETRA TECH PROJECT NO. S05-0511-006</b>  Direction: S	<b>DESCRIPTION</b>	Site returned to original condition	34
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 5	Date
	<b>PHOTOGRAPHER</b>	Tom Binz – Tetra Tech	12/13/05